JACKET FRAME FLOATING STRUCTURES WITH BUOYANCY CAPSULES

ABSTRACT OF THE DISCLOSURE

Jacket frame floating structures are disclosed that have one or more elongate vertical support columns formed of an open cross-braced jacket framework of tubular members interconnected together and at least one generally cylindrical buoyancy capsule disposed in the open framework near an upper end and at least generally cylindrical second buoyancy capsule therein near a lower end in vertically spaced relation. The buoyancy capsules may be a single upper and lower capsule, a plurality of upper and lower capsules bundled in circumferentially spaced relation, or upper and lower capsules having a cylindrical outer side wall and a cylindrical inner side wall defining a central opening extending therethrough. Alternatively, a keel tank may replace the lower capsule. The buoyancy of the upper buoyancy capsule(s) is adjustably tuned to provide a buoyant force and a sufficient water plane area and moment of inertia required for stability of the floating structure, and the water mass and weight of the lower buoyancy capsule(s) or keel tanks(s) is adjustably tuned to raise or lower the center of gravity of the entire mass of the floating structure with respect to its center of buoyancy according to ballast and variable or fixed loads including deck payloads, to stabilize the structure, and to compensate for different operational, environmental, survival and installation stages of the structure. The length of the upper buoyancy capsule(s) is sufficient so as to be partially submerged and allow oscillation of the trough and crest of waves within its top and bottom ends.